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Special Article - Updating the experimental composite leading indicator of the Australian business cycle

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BACKGROUND

The ABS Experimental Composite Leading Indicator (XCLI) is a single time series designed to provide early signals of turning points in the Australian business cycle. It does not predict the level of GDP or signal recessions or recoveries. Past performance of the XCLI shows it led turning points in the business cycle by between one and six quarters, with the average being around two quarters.

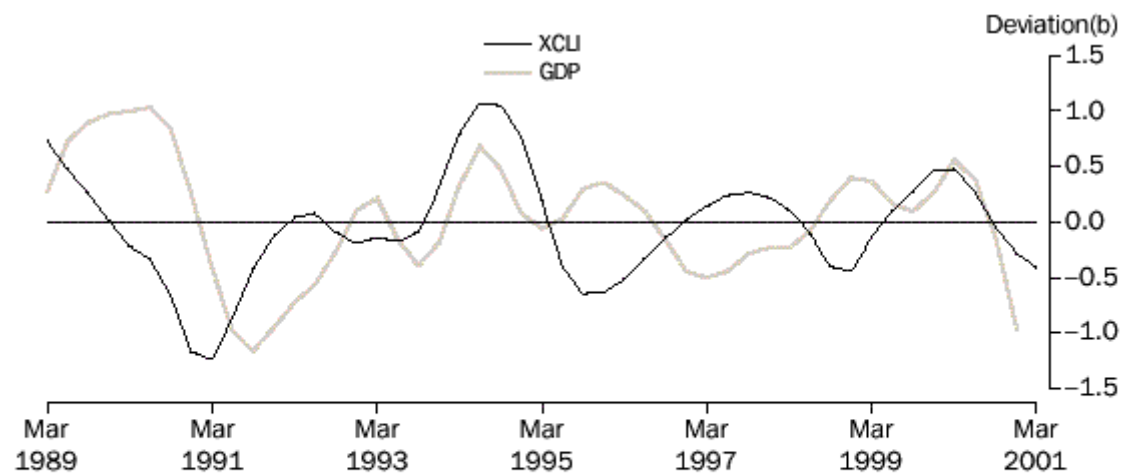
The XCLI has been developed to supplement rather than to compete with existing forms of economic analysis and forecasting. It is published each quarter in **Australian Economic Indicators** (in the March, June, September and December issues).

MOST RECENT MOVEMENTS

In the March quarter 2001, the XCLI continued to decline (down 0.13 to - 0.42) for the fourth consecutive quarter. This confirms that the XCLI peaked in the March quarter 2000 and that a peak in the GDP business cycle could be expected to emerge several quarters later. However, following revisions in GDP data, the GDP business cycle also peaked in the March quarter 2000. The change in the decline of the XCLI in the March quarter 2001 (- 0.13) is much smaller than that in the December quarter 2000 (-0.24). If this outcome continues, then the XCLI may turnaround within the next quarter or two.

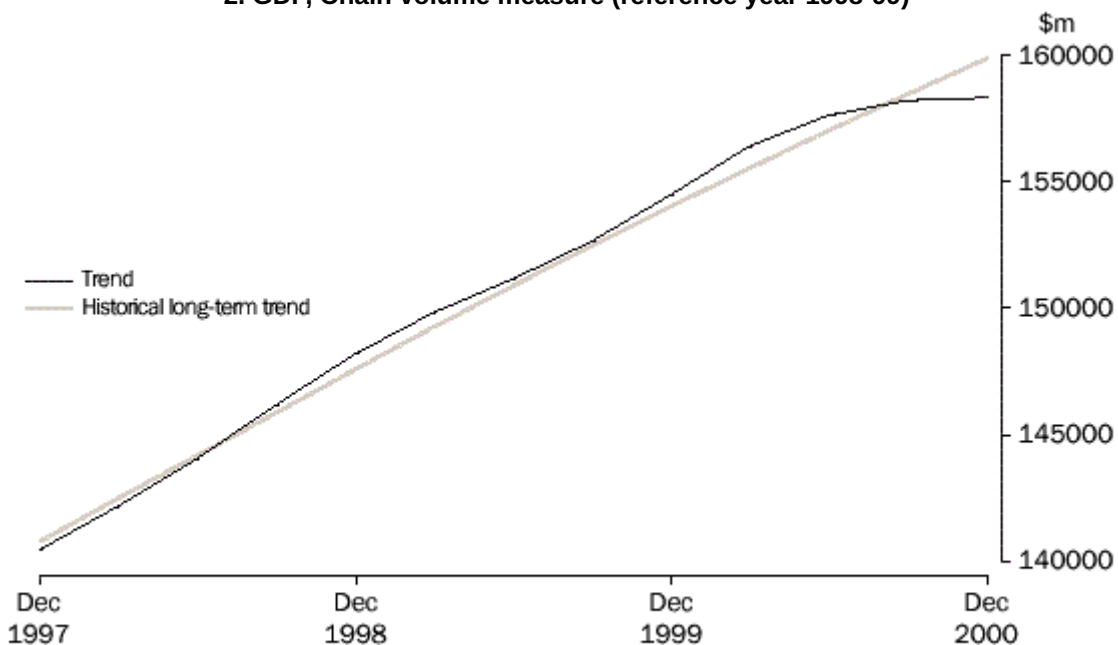
In the March quarter 2001, the largest negative contribution to the change in the XCLI came from the US GDP (-0.10) while the largest positive contribution came from the trade factor component (0.06) (see table 2).

1. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND ITS TARGET, THE BUSINESS CYCLE IN GDP - Chain volume measure (reference year 1998-99)(a)



- (a) In the December quarter 2000, the historical long-term trend growth rate of GDP is 0.89% and the trend growth rate is 0.07%.
- (b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless. (see Endnote).

2. GDP, Chain volume measure (reference year 1998-99)



Source: ABS (Cat. no. 5206.0), Quarterly data

Table 1: XCLI and GDP Chain volume measure (reference year 1998-99)

	Dec 1999	Mar 2000	Jun 2000	Sep 2000	Dec 2000	Mar 2001
Level						
XCLI	0.46	0.48	0.25	-0.06	-0.29	-0.42
GDP Trend (\$m)	154,468	156,414	157,634	158,216	158,332	n.a.
GDP Long-term trend (\$m)	154,035	155,544	157,038	158,472	159,882	n.a.
GDP Business cycle	0.28	0.56	0.38	-0.16	-0.97	n.a.
Movement from previous quarter						
XCLI (change)	0.19	0.02	-0.23	-0.31	-0.24	-0.13
GDP Trend (% change)	1.2	1.26	0.78	0.37	0.07	n.a.

GDP Long-term trend (% change)	1.02	0.98	0.96	0.91	0.89	n.a.
GDP Business cycle (change)	0.18	0.28	-0.18	-0.54	-0.81	n.a.

Table 2: Contributions to quarterly changes in the XCLI

	Dec 1999	Mar 2000	Jun 2000	Sep 2000	Dec 2000	Mar 2001
Trade factor	0.03	0.03	0.01	0.02	0.03	0.06
United States GDP	0.09	0.09	0.03	-0.04	-0.07	-0.10
Housing Finance Commitments	0.01	-0.10	-0.16	-0.09	0	0.05
Job Vacancies	0.08	0.02	0.01	-0.04	-0.07	-0.05
All Industrials Index	-0.03	0	0	0	-0.01	-0.04
Real interest rate (inverse lagged four quarters)	-0.03	-0.05	-0.05	-0.05	-0.02	0.01
Production expectations (lagged one quarter)	0.05	0.02	-0.02	-0.05	-0.07	-0.06
Business expectations (lagged one quarter)	0	-0.05	-0.06	-0.06	-0.02	-0.00
Total XCLI, change from previous quarter	0.19	0.02	-0.23	-0.31	-0.24	-0.13

There was a significant turnaround of 0.14 in the contribution of the secured housing finance commitments component to the change in the XCLI between the September quarter 2000 and March quarter 2001, from -0.09 in the September quarter 2000 to 0.05 in the March quarter 2001.

Following the weak original GDP data for the December quarter 2000, the growth of the GDP trend was slower over the second half of 2000 but was still positive—from a high of 1.26% in the March quarter 2000 to a low of 0.07% in the December quarter 2000. The growth of the historical long-term trend continued to decelerate and was 0.89% in the December quarter 2000, which is to be expected given the recent decline in GDP trend.

THE REFERENCE SERIES, GDP

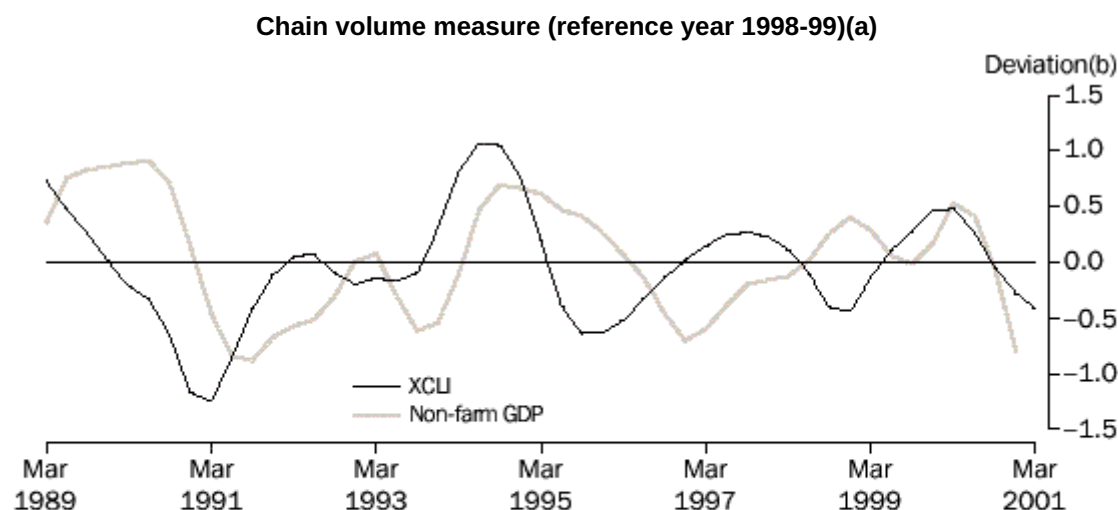
The reference or target series for the XCLI is the GDP business cycle in Australia. The business cycle of a series is defined as the deviation between the trend and the historical long-term trend in the series. Graph 1 shows the business cycles in GDP and the XCLI. Graph 2 shows the level of trend GDP compared with its historical long-term trend.

AN ALTERNATIVE REFERENCE SERIES, NON-FARM GDP

In the December quarter 1995, there was a peak in the business cycle which the XCLI failed to predict. This peak was largely attributable to the effects of a good farm season. The XCLI does not contain an indicator which leads first order farm product effects. In recognition of this, Graph 3 presents an alternative target series, namely, the business cycle of non-farm GDP, chain volume measure.

The XCLI peaked in the March quarter 2000. Based on historical performance, the non-farm GDP business cycle may have been expected to peak two quarters later. However, after revisions of the GDP trend, the non-farm GDP business cycle also peaked in the March quarter 2000.

3. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND, THE BUSINESS CYCLE IN NON-FARM GDP -



(a) In the December quarter 2000, the historical long-term trend growth rate of non-farm GDP is 0.89% while the trend growth rate is 0.14%.

(b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless (see Endnote).

ANALYSIS OF COMPONENT INDICATORS

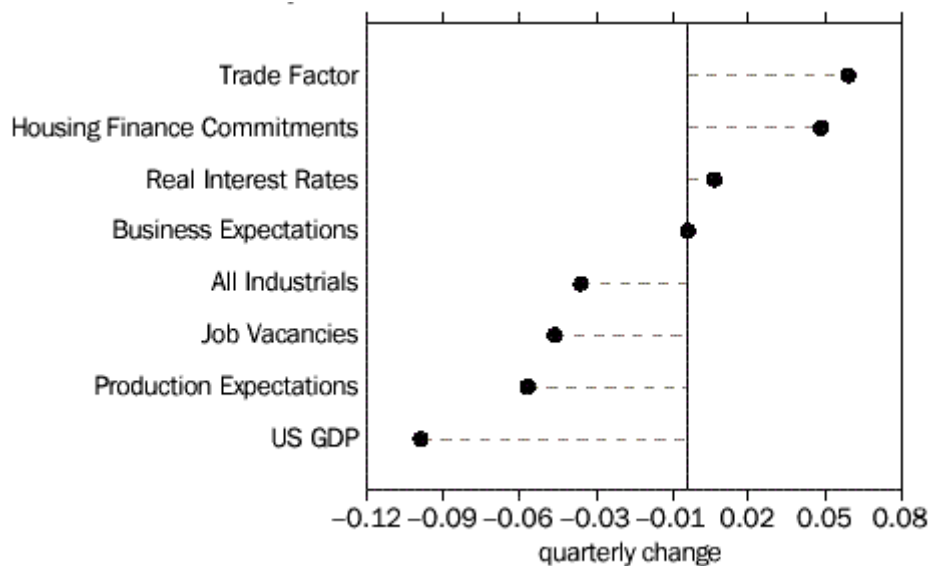
The XCLI summarises the business cycles present in a selection of economic indicators which had typically shown turning points ahead of the business cycle in GDP from the early 1970s to the early 1990s. Because the evolution of each expansion and contraction in activity presents a unique combination of features, none of the individual component indicators has had an unvarying or perfectly stable leading relationship with GDP. However, when combined to form the XCLI their performance as a group is more stable.

In the March quarter 2001, four of the eight components made negative contributions to the quarterly change in the XCLI, three components made a positive contribution, while another made a negligible contribution (Table 2 and Graph 4). However, overall the XCLI was still negative although the rate of decline was less than in the previous quarter. Graphs 5 to 12 show each component's trend and historical long-term trend.

Negative contributions. The components making negative contributions to the quarterly change in the March quarter 2001 XCLI were the US GDP (-0.10, Graph 6), production expectations (-0.06, Graph 11), job vacancies (-0.05, Graph 8), the All Industrials Index (-0.04, Graph 9) while business expectations made a negligible contribution (-0.00, Graph 12).

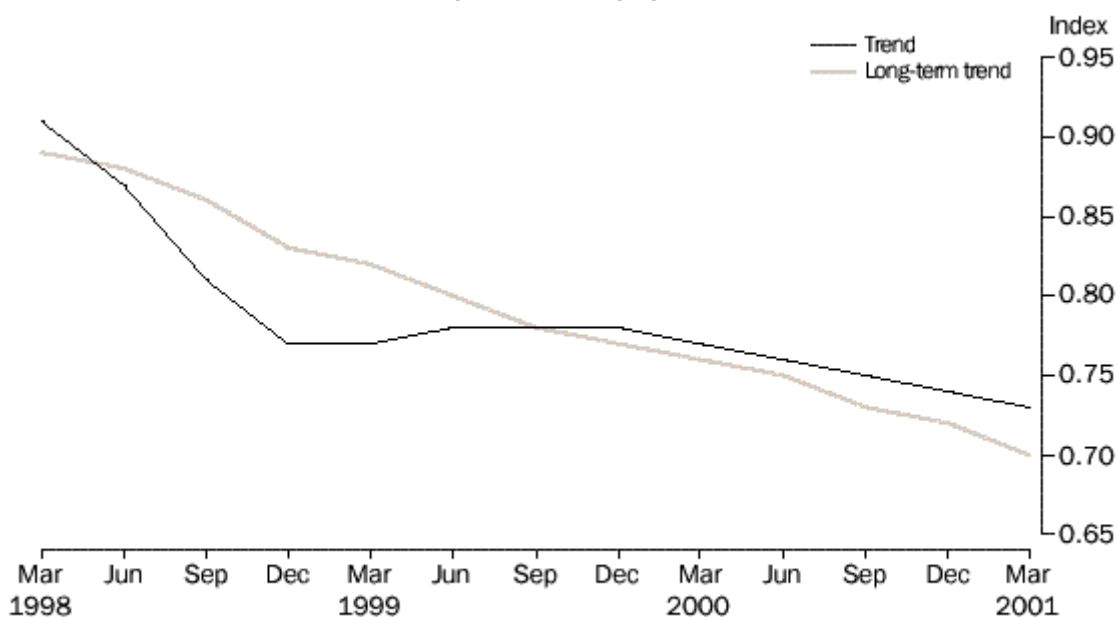
Positive contributions. The components making positive contributions to the quarterly change in the March quarter 2001 XCLI were the trade factor (0.06, Graph 5), housing finance commitments (0.05, Graph 7) and the real interest rate component (0.01, Graph 10).

4. CONTRIBUTIONS TO QUARTERLY CHANGES IN THE XCLI



TRADE FACTOR

5. TRADE FACTOR



Source: ABS (Cat. no. 6411.0) and RBA Bulletin.

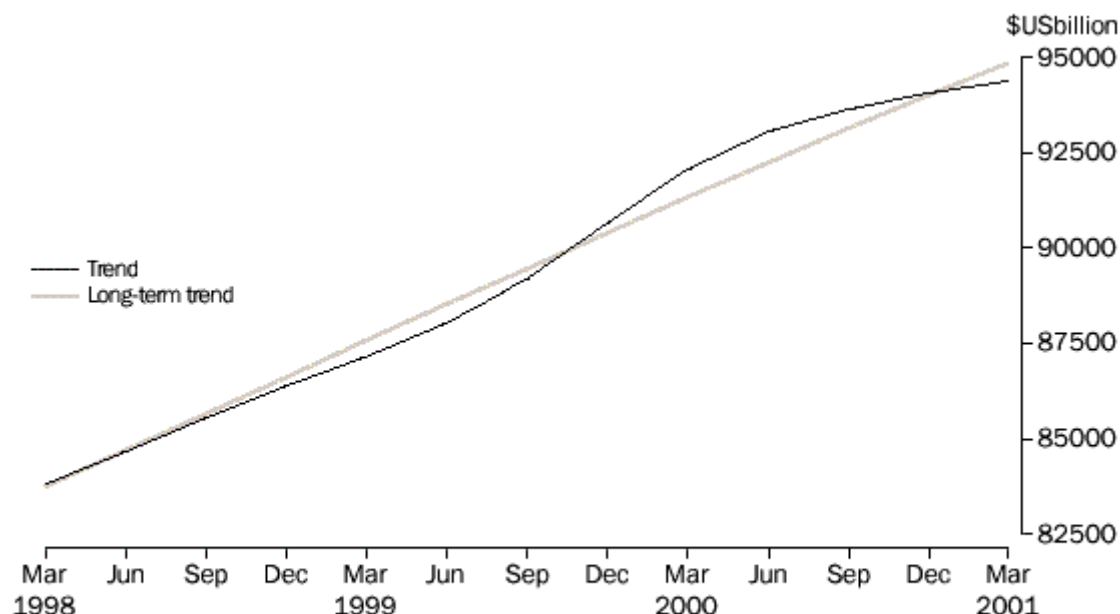
The trade factor is defined as the ratio between commodity prices in terms of Special Drawing Rights and the price index for imported materials used by Australian producers. This ratio gives an early indication of changes in the terms of trade. In the March quarter 2001, the trend of the trade factor continued to decline, although at a slower rate in comparison to its long-term trend. Therefore, given the position of the trend relative to its long-term trend and the trend's slower negative growth, the trade factor component made a positive contribution (0.06) to the change in the XCLI in the March quarter 2001, the largest positive contribution of all its components.

United States GDP

In the March quarter 2001, the trend of the United States GDP continued to rise, although at a

slower rate since the December quarter 1999. Further, the long-term trend also continued to increase in the March quarter 2001, although the rate of growth has decelerated since the June quarter 1998. The trend of the US GDP crossed below its long-term trend in the March quarter 2001 for the first time since the December quarter 1999. Therefore, the US GDP component made a negative contribution (-0.10) to the change in the XCLI in the March quarter 2001, the largest negative contribution of all its components.

6. UNITED STATES GDP, Chain volume measure (Reference year 1996)



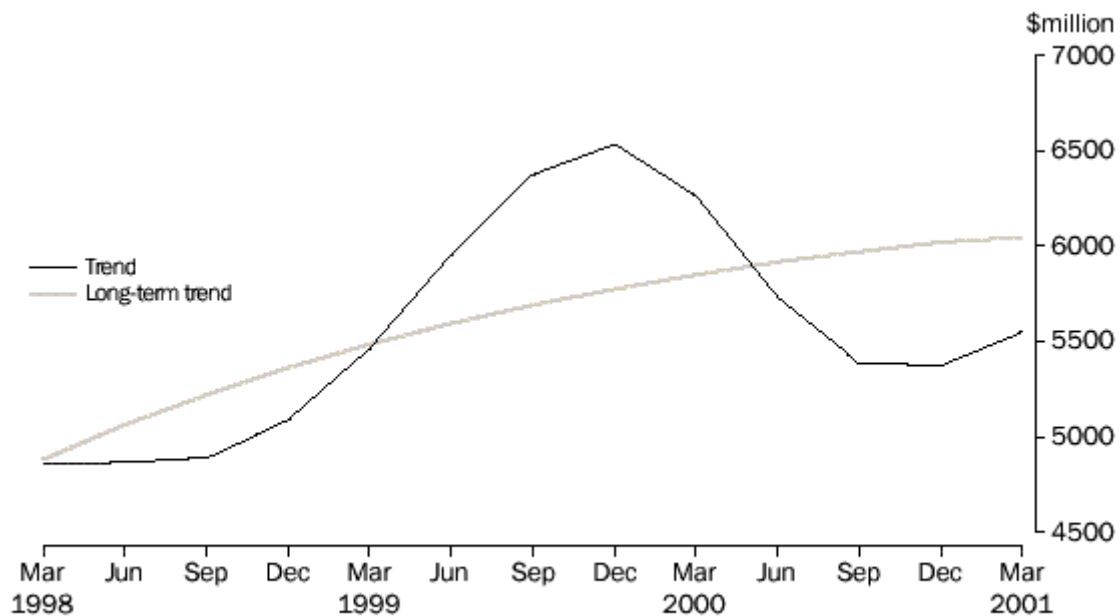
Source: US Bureau of Economic Analysis.

Secured housing finance commitments

Following four quarters of decline, the trend of the secured housing finance commitments rose in the March quarter 2001. The historical long-term trend for secured housing finance commitments continued to rise in the December quarter 2000 although at a decelerating rate over the last three years.

Since the trend grew faster than its long-term trend in the March quarter 2001, the secured housing finance commitments component contributed positively (0.05) to the change in the XCLI in the current quarter, following a negligible contribution in the December quarter 2000 and three strong negative contributions in the previous three quarters.

7. SECURED HOUSING FINANCE COMMITMENTS



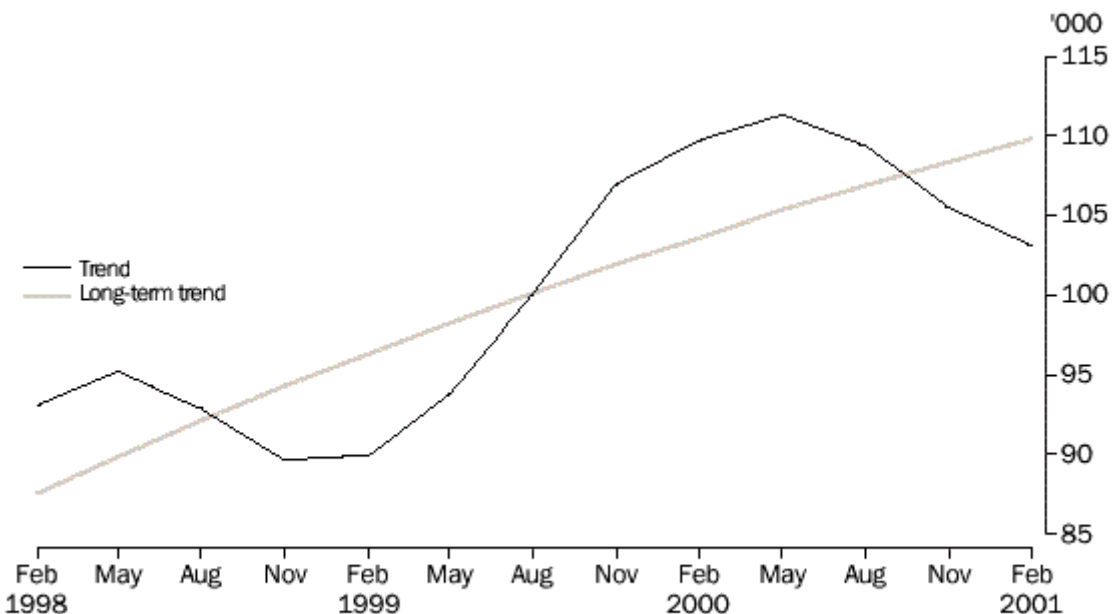
Source: ABS (Cat. no. 5671.0).

Job Vacancies

Note that the job vacancies series are referenced to the middle month of a quarter.

Following downward revisions to the original job vacancies data in May, August and November, the trend of the number of job vacancies was revised. It is now shown as beginning a decline in May 2000, which is still evident in February 2001. It crossed below its historical long-term trend in November 2000. In contrast, the historical long-term trend has been rising at a decelerating rate since May 1998. Job vacancies made a negative contribution (-0.05) to the change in the XCLI in the March quarter 2001.

8. JOB VACANCIES

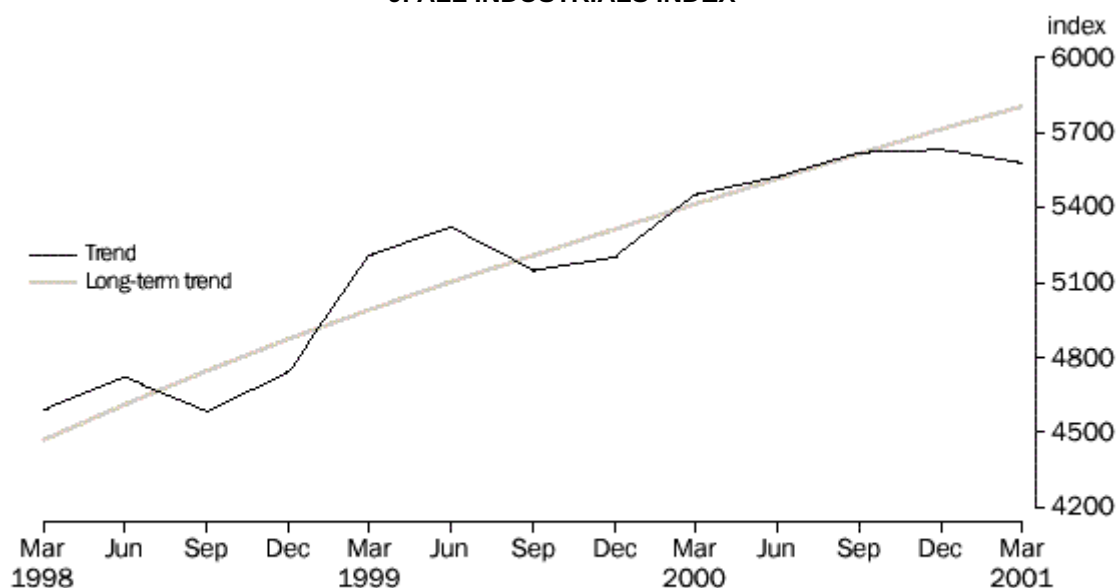


Source: ABS (Cat. no. 6354.0).

All Industrials index

In the March quarter 2001, the trend of the All Industrials Index declined while its historical long-term trend still rose strongly. Accordingly, in the March quarter 2001, the All Industrial Index made a negative contribution (-0.04) to the change in the XCLI in the March quarter 2001.

9. ALL INDUSTRIALS INDEX

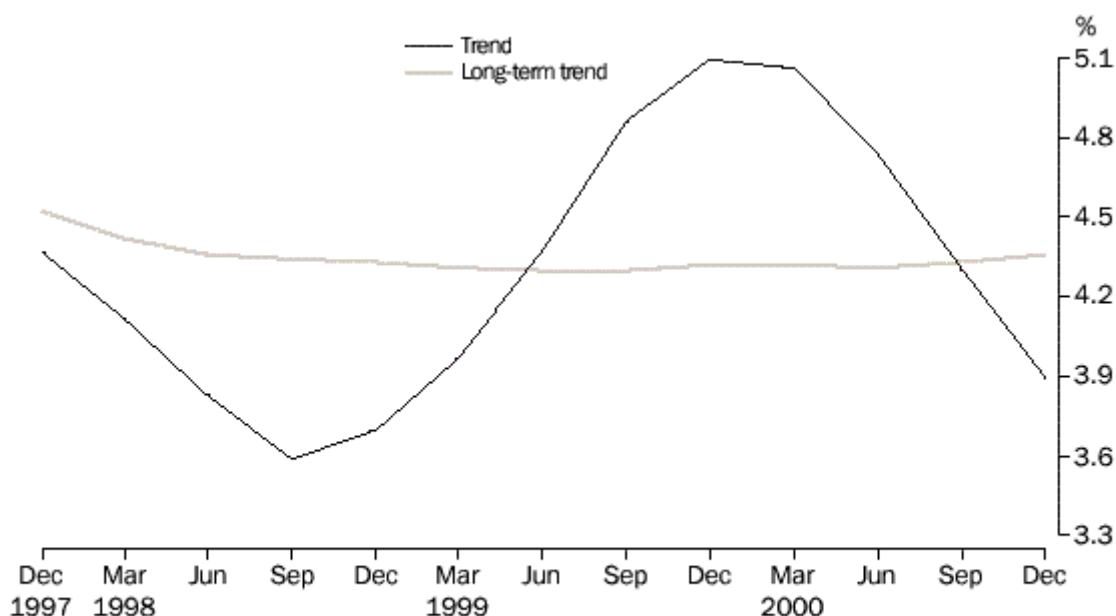


Source: Australian Stock Exchange.

Real interest rate

The XCLI uses the inverse of the difference between the trend and the historical long-term trend of the real interest rate, lagged four quarters. Therefore, it is the March quarter 2000 movement of the real interest rate that contributes to the March quarter 2001 movement in the XCLI. Following five quarters of negative contributions to the XCLI, the real interest rate component made a positive contribution (0.01, a turnaround of 0.03 from the previous quarter) to the change in the XCLI in the March quarter 2001.

10. REAL INTEREST RATE



Source: ABS (Cat. no. 5206.0) and Treasury.

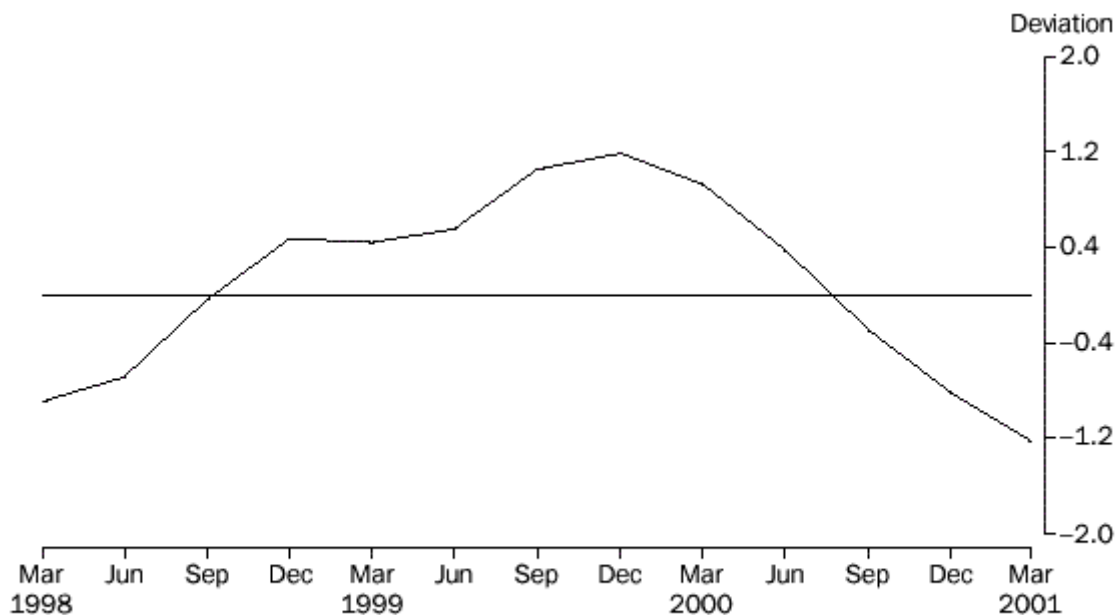
The trend of the real interest rate continued to decline in the December quarter 2000 for the fourth consecutive quarter and crossed below its long-term trend line for the first time since the June quarter 1999. The decline in the trend of the real interest rate component over the past four quarters and its position relative to its long-term trend, imply that the real interest rate component should continue to make positive contributions to the change in the XCLI through the March quarter 2002. The real interest rate is defined as the difference between nominal interest rates and the change in the domestic final demand chain price index.

Production and business expectations

Note: These components are lagged one quarter in the compilation of the XCLI. Like other XCLI components, the production expectations and business expectations series have been smoothed and standardised to display cyclical behaviour. However, these series are not considered to exhibit long-term trend growth.

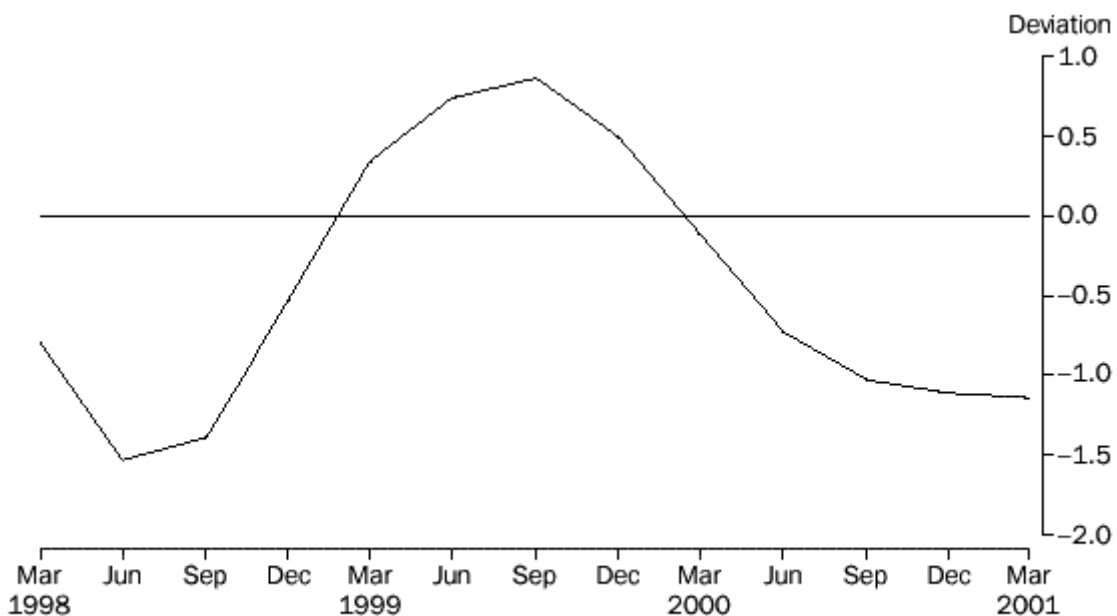
In the March quarter 2001, the trend of production expectations continued to decline and was negative for the third consecutive quarter. According to the December quarter 2000 Survey of Industrial Trends (produced by ACCI and Westpac Banking Corporation), production expectations in original terms are expected to continue to decrease next quarter but at a slower rate, and as a result of this, they may stabilise in the next quarter. This component made the second largest negative contribution (-0.06) to the change in the XCLI in the March quarter 2001.

11. PRODUCTION EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

12. BUSINESS EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

In the March quarter 2001, the trend of business expectations continued to decline. However, the rate of deterioration has slowed considerably over the last three quarters. In the March quarter 2001, the business expectations component made a negligible contribution to the change in the XCLI.

Note: The source of these expectations series is the Australian Chamber of Commerce and Industry, and Westpac Banking Corporation, Survey of Industrial Trends. The ABS also compiles business expectations data. However, the ABS data cannot yet be included as a component of the XCLI due to the insufficient length of the time series.

LONGER TIME SERIES AND FURTHER DETAILS

Details of the compilation of the XCLI index can be found in **An Experimental Composite Leading Indicator of Australian Economic Activity**, (1347.0), June 1993, and in the feature articles published in **Australian Economic Indicators** (1350.0) in August and October 1992 and May 1993.

Longer time series of the data presented in this XCLI article are now available on AUSSTATS. For further information about these statistics please contact Costa Pappas on Canberra (02) 6252 6161.

ENDNOTE

The unit of measurement varies between XCLI components. For example, the real interest rate is measured as a percentage, job vacancies as a number, United States GDP in dollar terms and the trade factor is measured in index number form. Each component is therefore standardised to make their contributions to the XCLI comparable.

The standardisation procedure gives each XCLI component an average value of 1. The variation of each component about its average is also standardised, so that the average deviation also equals 1. Chain volume GDP (the reference series) is also standardised in the same way.

Graphs 1 and 3 use the standardised forms of the XCLI, GDP and non-farm GDP series. The graphs show the deviation of the standardised series from their respective historical long-term trends. Because of the standardisation procedure, the deviation measure has no particular unit (i.e. it is not measured in dollars, or percentage change, or any other real world unit).

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